fall will be very rapid, both on account of gravitation and attraction, and (*a*) *the evaporation will be so great*, that it will be *frozen*. On touching the cloud B it *condenses* (*b*) *part of its vapour*, gets thus a coating of ice, and, having the same fluid as B, it will be repelled towards A, and so on, downwards and upwards, until it becomes heavy enough to fall to the ground."

My difficulties are the following :—Whence comes the evaporation spoken of at (*a*)?

According to the above, when it reaches B it is frozen. What then am I to understand by the "condensation of part of its vapour (*b*)?"

Also, would not the two clouds, A and B, having opposite fluids, themselves unite?

If you will kindly solve me these difficulties you will greatly oblige an IGNORAMUS

Butterfly Swarms

WITH reference to the case mentioned in NATURE, vol. xx. p. 220, I agree with your correspondent that "local fecundity" cannot be the cause of the great number of *Vanessa cardui* observed this year in the south of England, more especially as this species does not emerge from the chrysalis until the end of July at the earliest. It therefore appears to me probable that the specimens observed have migrated (having hybernated) from the Northern Counties or even from Scotland, in consequence of the exceptional severity of the weather this season. I would also suggest that the "periodical abundance" of this butterfly, as also that of *Colias hyale* and *Edusa*, besides several others, may be caused by some peculiarity in the food-plant itself. This is rendered more likely by the fact that both *Colias hyale* and *Edusa*, which feed upon plants of the Leguminous order, and often of the same species, appear in great abundance at the same period.

I may mention that where I reside I observed many specimens of *Vanessa cardui* last year (1878). In the preceding year (1877) both *Colias hyale* and *Edusa* were exceedingly plentiful, whereas last year (1878) I did not see a single specimen of either of these butterflies. F. H. HAINES

The Buses, Edenbridge, Kent, July 7

MR. J. H. A. JENNER says (NATURE, vol. xx. p. 220) that "last season (1878) he saw no specimens of *Vanessa cardui*, nor did he hear of any about Lewes." I would remark that *Vanessa cardui* was exceedingly abundant in the Isle of Wight; I could have caught scores in a few minutes. I would further remark that towards the close of the season I saw beds of nettles, many yards square, literally black with larvæ of *V. cardui*.[1] I anticipated then that they would be abundant this year, and so they are. W. REES SWAIN

Patent Museum, South Kensington, July 4

Intellect in Brutes

As an instance of intelligence in a cat, the following story is, I think, worthy of being recorded in your pages :—

My father, when a boy, kept a tame starling, which, having had its wings clipped, was allowed to hop about the house at random. It had been brought up, so to speak, with a little kitten, and a great friendship had been established between the two, they playing together, drinking out of the same saucer, &c., &c.

One day while the family were at dinner, with open doors, the cat suddenly pounced upon the starling, and every one thought that at last the cat's nature had got the better of its affection; but no. The cat carefully took up the starling, jumped with it on to a table, and leaving it there, rushed out of the room.

A moment after, the sound of a furious fight going on in the hall reached the ears of the astonished family, and it was then found that a strange cat had stolen into the house, with which the starling's friend was fighting. Evidently the house cat heard the approach of the enemy, and having first placed its playfellow in a comparatively safe place, rushed out to expel the intruder. A. DUPRÉ

Kensington, W., July 5

[1] [The larvæ referred to were probably those of *V. atalanta*. *V. cardui* ordinarily feeds on *thistles*.—ED.]

THE letters of X. and of Mr. Henry Clark in NATURE, vol. xx. p. 220, referring to the recognition of portraits by dogs, are, I think, very interesting, as my observations lead me to suppose that it is very rarely that a dog takes any notice of a painting or any representation on the flat. I only know of one instance. A bull terrier of mine was lying asleep upon a chair in the house of a friend, and was suddenly aroused by some noise. On opening his eyes, the dog caught sight of a portrait of a gentleman on the wall not far from him, upon which the light was shining strongly. He growled, and for some little time kept his eyes fixed upon the portrait, but shortly satisfying himself that there was no danger to be apprehended, he resumed his nap. I have often since endeavoured to induce him to pay some attention to portraits and pictures, but without success; but sometimes he will bark at his own reflection in a looking-glass. He knows it to be his own image that he sees, for he very soon tires both of barking and looking. Other authentic instances of this kind would be valuable. J. B. R.

July 4

I SEND the inclosed extract from the *Bedworth Guardian*. I can vouch for the fact, as Hawkesbury Station is near to me, and my son has witnessed the feats of poor Pincher. I trust that it will not be an unwelcome contribution to the interesting series of facts in evidence of animal sagacity recorded in NATURE.

Moat House, Walsgrave, Coventry, July 3 J. S. WHITTEM

"The picturesque little station at Hawkesbury Lane, between Nuneaton and Coventry, has, for some time past, been the home of a fox terrier, known as Pincher, an animal possessing almost human intelligence. Pincher—trained by its owner, Mr. Instone, to do so—would listen with marvellous patience and acuteness for the signal intimating that a train was approaching the station, and then, almost with the speed of lightning, rush to the signal-box, and, seizing the bell between its teeth, shake it heartily, and thus apprise the waiting passengers of the train's approach. This task accomplished, he would descend the steps leading from the box, proudly wagging his tail, and ready and willing, apparently, for any duty he might be called upon to perform. Often, as a train was leaving the station, Pincher would run beside it for about a hundred yards, as though acting under the impression that the engine-driver would be unable to obtain the necessary impetus without his assistance. On Sunday evening last Pincher's career was brought to an untimely end, but he died as became a dog of his attainments and renown, "in harness." Soon after seven o'clock on the evening named, two trains entered the station at one and the same time (Pincher having previously rung the bell), one going towards Nuneaton, the other in the contrary direction. Actuated by some motive or other—probably to see what was going on at the other side of the line—the dog darted under the carriages of the latter train, and one of the wheels passed over his neck, death being instantaneous."

Snails *v.* Glow-worms

WHEN writing on this subject I thought my facts might be questioned, but I did not expect they would be so distorted as they have been by Mr. McLachlan at p. 219.

I simply recorded what I had seen, and in accordance with the request at the head of your column for letters to the Editor, I made my letter "as short as possible."

The heading of my letter was correct, and I described what I certainly saw—a glow-worm in *the inside* of a snail, for when the snail moved its semi-transparent skin was between me and the light. There was no phosphorescent matter on the snail.

If the glow-worm was eating the snail, as both Mr. McLachlan and Mr. Greenwood Penny suggest, then, I conclude, he attacked *the liver*, and not the *lights*, as Mr. Henslow's cat did! At all events my opponents will agree with me in thinking that the snail had a *light* supper! The fact is evidently new to these gentlemen.

I shall feel obliged by any or all of them sending me some glow-worms, and I will try the experiment again, as well as some others. R. S. NEWALL

Gateshead-on-Tyne, July 8

Occurrence of Boar Fish

I RECEIVED several notices of the capture of boar-fish (*Capros aper*), on the south and south-east coasts of England during June

last. First from Bournemouth and Weymouth, where they were found not unfrequently dead on the shore. Again, one of the Leigh "shrimpers" took about a dozen specimens in his trawl net near Sheerness, at the mouth of the Thames. Another two specimens were taken likewise in a shrimp trawl off Harwich. None of these survived, no doubt having been too long in the trawl net, which is frequently three or more hours in the water. Dead specimens of these were sent for my observation, by Mr. Andrew, the aquarium fish collector of Southend-on-Sea. He says the Essex fishermen call them red dorees, but none remember having seen them on that coast before this year.

JOHN T. CARRINGTON

Royal Aquarium, Westminster, July 6

Habits of Ants

MY attention was lately called by a friend to the operations of a party of ants. The theatre of their work was a cherry-tree partly decayed in the centre. From this portion of the tree the busy creatures were bringing forth small grains of sawdust-like *débris*. These particles were conveyed to the prominence left by an amputated branch, and thrown over to the ground, a distance of about five feet. The particles were passed on from one ant to another—as water-buckets were at old-time fires. Nor was this all, for on the ground below, another party removed the accumulated material. In this connection the reader should consult a remarkable note on page 21 of Kerner's "Flowers and their Unbidden Guests" to further illustrate the intelligence of ants and their recognition of the principle of division of labour. I am unable to state the species of ant I observed, as I am not an entomologist. It was a rather large red ant.

W. WHITMAN BAILEY

Brown University, Providence, R.I. (U.S.), June 17

WILLIAM FOTHERGILL COOKE

THERE has slipped away noiselessly and quietly one of England's scientific pioneers and one of the world's benefactors. Sir William Fothergill Cooke was the father of electric telegraphy. Born in 1806, educated in Durham, where his father was a professor, he joined the East India Company's military service in 1826, from which he retired in 1835 to study anatomy and physiology in Paris and Heidelberg. He was very clever at wax modelling. In 1836 a lecture on Schilling's telegraph directed his attention to the electric telegraph. His was the active sanguine mind that saw the great future of telegraphy before him, and that, in spite of supineness and unbelief, forced the new agent on an unwilling world. He was not an inventor nor a discoverer, but he was a far-seeing, practical man, with a determined will, indomitable energy, and of great resources. Associated with Wheatstone, he established telegraphy as a commercial undertaking. The first experimental line in England was put up in 1837. The first Electric Telegraph Company was incorporated in 1844. The first cable was laid in 1851. Now the world is one network of wires, and while the pioneer of this great system is carried to his grave, representatives from every civilised nation of the earth meet in telegraphic parliament in London without heaving one sigh or casting one thought

"O'er the grave where our hero we buried."

THE COMPARATIVE ANATOMY OF MAN[1]

II.

The Andaman Islanders (continued)

HITHERTO the osteological characters of these people have only been known from one skeleton, briefly described by Prof. Owen, two crania by Mr. Busk, and two by Prof. Quatrefages. During the last half year, the College museum has received a valuable series of skeletons, collected, at the request of Sir Joseph Fayrer, by the late Dr. J. Dougall, senior medical officer at Port Blair; others have been lent for the purpose of illustrating this course by Professors Rolleston and Allen Thomson, amounting altogether to nineteen skeletons, and about thirty crania.

The common estimate among Europeans, which is fairly correct for averages, is that the length of the femur is to the height of the living person as 275 is to 1,000. Only one of the above-mentioned Andamanese skeletons has been articulated, but this shows exactly the same proportion. Calculated on this basis, the average height of the skeletons of males would be 4 feet 9 inches, the tallest being 5 feet 3 inches, and the shortest 4 feet 6 inches. The average height of the ten skeletons of females would be 4 feet 6 inches, the tallest being 4 feet 10 inches, the shortest 4 feet 3 inches.

Attention was first drawn to the fact that the proportions of the different segments of the limbs might differ in various races by the announcement in 1799, by White, of Manchester, since amply confirmed, that the forearm of the Negro is proportionally longer than that of the European. Unfortunately, skeletons of most races are so rare in collections, that we have at present but few reliable data on this subject, and it is only when a sufficient number can be obtained, on which to found a fair average, that any satisfactory law can be established.

The first ratio, or index, is that obtained by the comparison of the entire upper and lower limbs with each other, the *intermembral index*, or the length of the humerus and radius added together, as compared with that of the femur and tibia, the latter being taken as 100. This ratio, in the nineteen Andaman skeletons, is 68·3; in fourteen Europeans, measured in the same manner, 69·2, showing a slight diminution in the length of the arm of the former, as compared with the latter. This has been also found by Broca, to be the case with African Negroes. The *femoro-humeral index* is the ratio of the humerus to the femur, the latter being taken as 100. In Europeans, according to Prof. Flower's and Broca's measurements, this is 72 to 73; in Negroes, according to Broca, 68·9; in the Andamanese, 69·8; showing that in both the latter races the humerus is relatively shorter than the femur. The *femoro-tibial index* is the length of the tibia to the femur, the latter being 100. In Europeans, this is 82; in Negroes, according to Prof. Humphry, 84·7; in the Andamanese, almost exactly the same, 84·5. The *humero-radial index*, or the length of the radius, compared to the humerus is, perhaps, the most important, as being subject to greater variations in different races. In nine Europeans measured by Broca, it is 73·9; in fourteen Europeans in the College Museum, it is exactly the same; in fifteen Negroes measured by Broca, 79·4; in the nineteen Andamanese, 81. Thus the differential characters of the Andamanese, as compared with Europeans, in respect to the proportions of the limb-bones, lie mainly in the greater length of the distal segment of each limb as compared with the proximal segment, a peculiarity most especially manifested in the upper extremity.

In the *Bulletin* of the Paris Anthropological Society of last year, Broca called attention to the form of the scapula as a race-character, and showed that one of the principal modifications of the form of this bone could be expressed by an index formed of a ratio between the two chief diameters of the bone, *i.e.*, the length from the posterior superior angle (C) to the inferior angle (D), and the breadth from the middle of the posterior margin of the glenoid cavity (A) to the point on the posterior or vertebral border from which the spine arises (B). The ratio of the length (C D) to the breadth (A B), the latter being 100, is called the *scapular index*. In the anthropoid apes the index varies between 70 and 100, and in most of the lower forms of monkeys and other mammals, it is considerably higher. A high index is, therefore, a sign of inferiority. Broca found that the average in

[1] Abstract of Prof. Flower's Hunterian Lectures, delivered at the Royal College of Surgeons, commencing on Wednesday, March 5. Continued from p. 225.